

Results of Directional Survey

DD

API number:	30-025-40599		
OGRID:		Operator:	COG OPERATING LLC
		Property:	SC FEDERAL # 12

surface

ULSTR:	O	22	T 17S	R 32E
			536 FSL	1668 FEL

BH Loc

ULSTR:	O	22	T 17S	R 32E
7094 MD		7089.4 TVD	346 FSL	1676 FEL

Top Perf/OH	ULSTR:	O	22	T 17S	R 32E
5622	MD	5618.3	TVD	398 FSL	1674 FEL

Bot Perf/OH	ULSTR:	O	22	T	17S	R	32E
6824	MD	6819.5	TVD	353	FSL	1676	FEL

	MD	N/S	E/W	VD
	5462.00	-131.74	-5.52	5458.45
TOP PERFS/OH	5622.00	-138.01	-6.18	5618.32
	5641.00	-138.76	-6.26	5637.31
	6713.00	-179.63	-8.11	6708.50
BOT PERFS/OH	6824.00	-182.82	-7.87	6819.46
	6891.00	-184.74	-7.72	6886.43

NEXT TO LAST	7047.00	-188.95	-7.62	7042.37
LAST READING	7094.00	-190.18	-7.65	7089.36
TD	7094.00	-190.18	-7.65	7089.36

Surface Location	536 FS	1668 FE
Projected BHL	346 FS	1676 FE
Location of		
Top Perfs/OH	398 FS	1674 FE
Bottom Perfs/OH	353 FS	1676 FE

SUMMARY of Subsurface Locations

Surface Location	O-22-17S-32E	536 FS	1668 FE	Vert. Depth
Top Perfs/OH	O-22-17S-32E	398 FS	1674 FE	5618.32
Bottom Perfs/OH	O-22-17S-32E	353 FS	1676 FE	6819.46
Projected TD	O-22-17S-32E	346 FS	1676 FE	7089.36

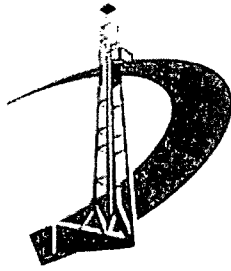
INC

NOV 25 2014

HOBBS OCD

NOV 21 2014

RECEIVED



PRODIRECTIONAL

P.O. Box 750 | Conroe, TX 77305 | Phone: 936-441-7266
www.prodirectional.com



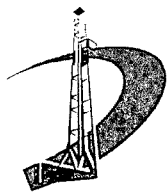
ConocoPhillips

SC Federal No. 12
Lea County, NM

August 18, 2014

Job No. LNM 5113314

Survey Completion Report



PRODIRECTIONAL

Professional Directional Ltd.

P.O. Box 750 | Conroe, TX 77305 | (936) 441-7266

August 18, 2014



ConocoPhillips

SC Federal No. 12

Lea County, NM

Job No. LNM 5113314

Survey Certification Form:

This is to certify surveys from **996'MD** to a depth of **7,094'MD** are true and correct MWD Surveys. These surveys were taken from **08/10/2014** through **08/14/2014**.

Sincerely,

John Jordan | Well Planning

PRODIRECTIONAL



ConocoPhillips

Lea County, NM
SC Federal No. 12
OH

Survey: ProDirectional

Survey Report

18 August, 2014





Professional Directional
Wellpath Report



Company:	Conoco Phillips	Local Co-ordinate Reference:	Well No. 12
Project:	Lea County, N.M.	TVD Reference:	WELL @ 4000.00usft (Original Well Elev)
Site:	SC Federal	MD Reference:	WELL @ 4000.00usft (Original Well Elev)
Well:	No. 12	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Well_Planner1

Project	Lea County, N.M.		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	SC Federal		
Site Position:		Northing:	661,068.40 usft
From:	Map	Easting:	679,895.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 48' 57.584 N
		Longitude:	103° 44' 51.991 W
		Grid Convergence:	0.32 °

Well	No. 12		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 48' 51.086 N
		Longitude:	103° 45' 2.161 W
		Ground Level:	3,987.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	User Defined	8/18/2014	7.50
			Dip Angle
			(°)
			60.62
			Field Strength
			(nT)
			48,715

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			180.00

Survey Program	Date 8/18/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
996.00	7,094.00	Survey #1 (OH)	MWD
			Description
			MWD - Standard



Professional Directional Wellpath Report



Company: Conoco Phillips
Project: Lea County, N.M.
Site: SC Federal
Well: No. 12
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well No. 12
TVD Reference: WELL @ 4000.00usft (Original Well Elev)
MD Reference: WELL @ 4000.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	TFace (°)	
951.00	0.00	0.00	951.00	0.00	0.00	0.00	0.00	660,407.00	679,031.00	0.00	
996.00	0.50	293.10	996.00	0.08	-0.18	-0.08	1.11	660,407.08	679,030.82	293.10	
ProDirectional First Survey: 996' MD											
1,175.00	0.90	334.40	1,174.99	1.65	-1.51	-1.65	0.35	660,408.65	679,029.49	73.48	
1,353.00	0.80	344.50	1,352.97	4.11	-2.44	-4.11	0.10	660,411.11	679,028.56	128.70	
1,532.00	0.90	1.10	1,531.95	6.72	-2.75	-6.72	0.15	660,413.72	679,028.25	76.34	
1,710.00	1.40	26.30	1,709.91	10.07	-1.76	-10.07	0.39	660,417.07	679,029.24	58.39	
1,889.00	0.90	107.40	1,888.89	11.61	0.55	-11.61	0.86	660,418.61	679,031.55	144.80	
2,068.00	1.90	148.30	2,067.83	8.66	3.45	-8.66	0.76	660,415.66	679,034.45	66.68	
2,246.00	0.20	225.60	2,245.80	5.93	4.78	-5.93	1.05	660,412.93	679,035.78	174.00	
2,425.00	1.60	218.80	2,424.77	3.77	2.99	-3.77	0.78	660,410.77	679,033.99	-7.77	
2,604.00	2.70	212.30	2,603.64	-1.74	-0.83	1.74	0.63	660,405.26	679,030.17	-15.76	
2,782.00	2.40	221.60	2,781.47	-8.08	-5.54	8.08	0.29	660,398.92	679,025.46	130.53	
2,961.00	2.30	197.80	2,960.32	-14.30	-9.13	14.30	0.54	660,392.70	679,021.87	-107.66	
3,140.00	1.90	182.30	3,139.20	-20.68	-10.35	20.68	0.39	660,386.32	679,020.65	-132.74	
3,319.00	2.70	175.80	3,318.06	-27.85	-10.16	27.85	0.47	660,379.15	679,020.84	-21.33	
3,497.00	3.50	175.20	3,495.80	-37.45	-9.39	37.45	0.45	660,369.55	679,021.61	-2.62	
3,676.00	3.30	179.30	3,674.48	-48.04	-8.87	48.04	0.18	660,358.96	679,022.13	131.47	
3,854.00	3.20	182.10	3,852.20	-58.13	-8.99	58.13	0.11	660,348.87	679,022.01	123.60	
4,033.00	1.80	168.50	4,031.02	-65.88	-8.62	65.88	0.84	660,341.12	679,022.38	-163.73	
4,212.00	2.40	188.60	4,209.90	-72.34	-8.62	72.34	0.53	660,334.66	679,022.38	61.17	
4,390.00	3.30	170.70	4,387.68	-81.08	-8.35	81.08	0.71	660,325.92	679,022.65	-53.85	
4,569.00	3.40	165.70	4,566.38	-91.31	-6.20	91.31	0.17	660,315.69	679,024.80	-73.61	
4,747.00	2.70	177.80	4,744.13	-100.61	-4.74	100.61	0.53	660,306.39	679,026.26	143.33	
4,926.00	2.60	179.70	4,922.94	-108.89	-4.55	108.89	0.07	660,298.11	679,026.45	139.65	
5,104.00	2.50	179.20	5,100.76	-116.81	-4.48	116.81	0.06	660,290.19	679,026.52	-167.71	
5,283.00	2.40	185.30	5,279.60	-124.44	-4.77	124.44	0.16	660,282.56	679,026.23	114.01	



Professional Directional Wellpath Report



Company:	Conoco Phillips	Local Co-ordinate Reference:	Well No. 12
Project:	Lea County, N.M.	TVD Reference:	WELL @ 4000.00usft (Original Well Elev)
Site:	SC Federal	MD Reference:	WELL @ 4000.00usft (Original Well Elev)
Well:	No. 12	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Well_Planner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	TFace (°)	
5,462.00	2.30	186.50	5,458.45	-131.74	-5.52	131.74	0.06	660,275.26	679,025.48	154.40	
5,641.00	2.20	185.60	5,637.31	-138.73	-6.26	138.73	0.06	660,268.27	679,024.74	-160.99	
5,819.00	2.40	182.60	5,815.16	-145.85	-6.77	145.85	0.13	660,261.15	679,024.23	-32.55	
5,998.00	2.50	183.80	5,994.00	-153.49	-7.20	153.49	0.06	660,253.51	679,023.80	27.76	
6,177.00	2.70	186.40	6,172.82	-161.58	-7.92	161.58	0.13	660,245.42	679,023.08	31.83	
6,356.00	1.90	180.40	6,351.67	-168.74	-8.42	168.74	0.47	660,238.26	679,022.58	-166.23	
6,534.00	1.70	178.80	6,529.58	-174.33	-8.38	174.33	0.12	660,232.67	679,022.62	-166.69	
6,713.00	1.70	175.30	6,708.50	-179.63	-8.11	179.63	0.06	660,227.37	679,022.89	-91.75	
6,891.00	1.60	176.10	6,886.43	-184.74	-7.72	184.74	0.06	660,222.26	679,023.28	167.43	
7,047.00	1.50	181.40	7,042.37	-188.95	-7.62	188.95	0.11	660,218.05	679,023.38	127.53	
Last Survey: 7,047' MD, 7,042.37' TVD											
7,094.00	1.50	181.40	7,089.36	-190.18	-7.65	190.18	0.00	660,216.82	679,023.35	0.00	
PTB: 7,094' MD											

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
996.00	996.00	0.08	-0.18	ProDirectional First Survey: 996' MD
7,047.00	7,042.37	-188.95	-7.62	Last Survey: 7,047' MD, 7,042.37' TVD
7,094.00	7,089.36	-190.18	-7.65	PTB: 7,094' MD